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STUDIES ON DECAPOD CRUSTACEA FROM THE INDIAN RIVER REGION OF FLORIDA. VI. THE IDENTITY OF *PARTHENOPE* (*PLATYLAMBRUS*) *SERRATA* (H. MILNE EDWARDS, 1834) AND *PARTHENOPE* (*PLATYLAMBRUS*) *GRANULATA* (KINGSLEY, 1879)*

Robert H. Gore

Introduction

While examining a relatively large collection of parthenopid crabs from continental shelf waters off both the western and eastern central Florida coasts, I found an extensive series of what I at first considered to be *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards, 1834). I noticed, however, that male specimens identified as *P. serrata* exhibited two different forms of gonopods. One form agreed with those figured by Williams (1965) as *P. serrata*, while the other form could not be attributed to any species whose gonopods were illustrated in the available literature. It was apparent that two species had been confused under the name *P. serrata* and that one of the forms was either an undescribed species or had been previously described as new and later synonymized with *P. serrata*. It was, therefore, necessary to determine which specimens, both in the present material and those reported in the literature, belonged to *P. serrata* and which to the second species. A search of the literature revealed that three names were available for the two species: *Lambrus serratus* H. Milne Edwards, 1834, for the "true" species, and either *Lambrus crenulatus* Saussure, 1858, or *Lambrus granulatus* Kingsley, 1879, for the second species. The latter two names had been applied to juvenile specimens. As will become evident, the species originally described as *Lambrus granulatus* Kingsley, 1879, proved to be the oldest available and correct name for the second species; hence this name must be resurrected from the synonymy of *Parthenope serrata* (H. Milne Edwards, 1834) and reestablished.

A Brief Taxonomic History of Available Names

H. Milne Edwards (1834:357) briefly described, but did not illustrate a species of parthenopid crab which he named *Lambrus serratus*. He noted the locality as "Habite l'Océan indien," and gave measurements of length as ". . . près d'un pouce" (= 1 inch). Three male specimens, possibly syntypes, are present in the Muséum National d'Histoire Naturelle, Paris (J. Forest, in litt.); these specimens will be discussed further, below.

The earliest available name for the second species is *Lambrus crenulatus*, described and illustrated by Saussure (1858) from several individuals collected from the Caribbean Sea ("Les mers de Antilles"). These specimens were supposedly placed in the Muséum d'Histoire Naturelle de Genève,

Switzerland. But Dr. Bernd Hauser, Curator of Arthropods informed me that only a single syntype, a juvenile female, is extant. Unfortunately, the specimen illustrated by Saussure (1858, pl. 1, fig. 4) differs considerably from this syntype, especially in size, if Saussure's Figure 4a is indicative of actual size of the specimen. This problem will also be discussed at length.

Stimpson (1860, 1871a) noted *Lambrus crenulatus* in publications referring to material belonging to the Smithsonian Institution, or from collections made in the Straits of Florida, respectively. He may have recognized the similarity between H. Milne Edwards' *L. serratus* and *L. crenulatus* (as probably did Saussure), but considered the two species distinct because of the Indian Ocean locality given by the former author. It is probable that much or all of Stimpson's material was lost during the great Chicago Fire (Evans, 1967) so little more can be said in this respect.

A. Milne Edwards (1878) was apparently the first to point out that H. Milne Edwards' locality of the Indian Ocean for *Lambrus serratus* was, in all probability, erroneous. He further suggested that Saussure would have recognized the identity of his species with *L. serratus*, had that author not been misled by the erroneous locality. A. Milne Edwards thus considered *L. crenulatus* synonymous with *L. serratus*, and placed the latter in Stimpson's recently (1871a) erected genus, *Platylambrus*. A. Milne Edwards referred in the same work to a "fine example" of *P. serratus* in the Paris Museum which came from "Vera Cruz," and apparently illustrated this specimen in a rather stylized manner (1878, pl. 30, fig. 1). As will be shown, this illustration is the only one that may be attributed to a specimen actually used by H. Milne Edwards when he formulated his description of *L. serratus*.

The second oldest available name for the species in question is *Lambrus granulatus* Kingsley, 1879. Kingsley established this species on a juvenile male collected from Tortugas, Florida by a Lieutenant Jacques. This specimen, and perhaps an unmentioned female "cotype" (= syntype), was deposited in the Peabody Academy of Science, Salem, Massachusetts. Kingsley also noted the close relationship of his species to *L. crenulatus* but considered the two species distinct according to somewhat tenuous characters. Much of the material in the Peabody Academy was subsequently transferred to the Museum of Comparative Zoology, Harvard. Unfortunately, the male specimen noted by Kingsley is no longer extant, and according to Dr. Herbert Levi of that Institution, was probably borrowed some years earlier and never returned. The female syntype, obtained later by the National Museum of Natural History, Washington, D.C., from the Boston Society of Natural History, was examined for this study.

Subsequent authors, including Kingsley himself (1880), made no further mention of *L. granulatus*, presumably acceding to the idea that the species

was merely a synonym of *L. crenulatus* Saussure or *L. serratus* H. Milne Edwards. Moreover, only two other publications cited the specific name *crenulatus*. Gundlach and Torralbas (1899) briefly redescribed and rather poorly illustrated a species from Cuban waters they attributed to *L. crenulatus*. Verrill (1908, 1922) described as *Parthenope crenulata* a form from Bermuda which he believed allied to *L. crenulatus* (*sensu* Saussure, 1858). A. Milne Edwards (1880) and all later authors recognized but a single species, the name of which ultimately became established as *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards, 1834).

Two other names in the literature deserve comment. White (1847:12) listed three specimens of a parthenopid crab in the British Museum (Natural History) which he named *Lambrus lupoides*, but did not describe or illustrate further. *Lambrus lupoides* is, therefore, a *nomen nudum* and has been treated as such by later authors. A syntypic male specimen [British Museum (Natural History) No. 1939.5.8.10, Marie Galante, French West Indies] from White's series of *Lambrus lupoides*, presumably his "specimen c," was examined. The specimen measures 19 mm carapace length (cl) and is in excellent condition, although the chelipeds and some walking legs are detached. Gonopod morphology and both carapacial and cheliped features show that White's "specimen c" is unquestionably identical to *Lambrus serratus* H. Milne Edwards (see Plate 3B). Whether the other two specimens of White's series are also identical to *L. serratus* has not been ascertained.

The second name that may be disposed of is *Lambrus melanodactylus* Desbonne in Schramm, 1867, from Guadeloupe, French Lesser Antilles. This name was only a manuscript name of Desbonne's, published posthumously by Schramm who used Desbonne's manuscripts, and who published the name in synonymy of *Lambrus crenulatus* Saussure. The type-specimen of *L. melanodactylus*, a male, was presumably placed in the Guadeloupe Museum, but I have been unable to confirm whether it is extant. It is of little consequence, however, because the name *L. melanodactylus* was first published as a synonym of *L. crenulatus*. As no other author treated the name as available, or adopted the name, it is not available according to Article 11 (d) of the International Code of Zoological Nomenclature. Rathbun (1925) retained *L. melanodactylus* in the synonymy of *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards), and Flipse (1930, 1931) followed her in considering both *L. crenulatus* Saussure, *L. melanodactylus* Schramm, and *L. granulatus* Kingsley to be junior subjective synonyms of *Parthenope serrata* (H. Milne Edwards).

The Status of *Lambrus serratus* H. Milne Edwards, 1834

Before discussing further the status of the two names available for the second species, it is necessary to firmly establish the status of *Lambrus*

serratus. Dr. Jacques Forest informed me (in litt.) that three dried male specimens of this species are present in the Paris Museum which possibly could be those studied by H. Milne Edwards. One lot consists of two individuals, one in very poor condition, and is labelled: "*Lambrus serratus* Edw." with no further data on locality. The specimens measure 18 and 20 mm cl, respectively. The second lot consists of one male, labelled: "*Lambrus serratus* Edw., Vera Cruz, Mr. Bremónd," and the specimen measures 23 mm, cl. Dr. Forest suggested that H. Milne Edwards might have made use of any or all of these specimens, or others now missing when he formulated the description for *Lambrus serratus*. Unfortunately, there is no indication in Milne Edwards' (1834) description as to which specimens he had before him. And because none of the three aforementioned specimens have dates of collection indicated there is no certainty as to whether any one or all three were collected prior to 1834, a date which would almost certainly ensure their having been examined by H. Milne Edwards. As noted earlier, A. Milne Edwards (1878) thought the Indian Ocean locality to be erroneous, but regrettably there is no indication of such locality with the three specimens here considered. Thus, the only criterion remaining in determining which specimen may have been referred to by H. Milne Edwards is that of size. The third male in the series, 23 mm cl, is the specimen closest to the indicated size ". . . près d'un pouce [nearly one inch]." With no evidence to the contrary one may, for purposes of stability, presume this specimen to be one of an undetermined number in a syntypic series. In accord with Dr. Forest's suggestion, I now establish this third male specimen, collected by Mr. Brémond at Veracruz, as the lectotype for *Lambrus serratus* H. Milne Edwards, 1834, and thus finally fix the status of the species (Plate 1A). By designation the type locality now becomes Veracruz, Mexico.[1]

Dr. Forest also believes that the supposed Indian Ocean locality is "d'un erreur pure et simple," pointing out that H. Milne Edwards always used the expression "Océan Indien" in its modern acceptance, while designating the Caribbean area as "Antilles" or "Mers des Antilles." Moreover, it hardly seems likely that A. Milne Edwards would be unaware of the etymological variations of his mother tongue as employed by his father, H. Milne Edwards. Therefore, Boone's (1930) suggestion that "L'Océan Indien" was an idiomatic expression used by H. Milne Edwards for West Indian Seas is entirely without foundation.

A. Milne Edwards' (1878) figure of *Platylambrus serratus* appears to be somewhat stylized, but if it is the "bel examplaire" from "Vera Cruz" noted in his work it presumably is identical to the male lectotype just established. His plate 30, fig. 1 may be compared to Plate 1A in this study. A comparison of the two other possibly syntypic specimens in the Paris Museum with the male lectotype shows that they, too, belong to *Lambrus*

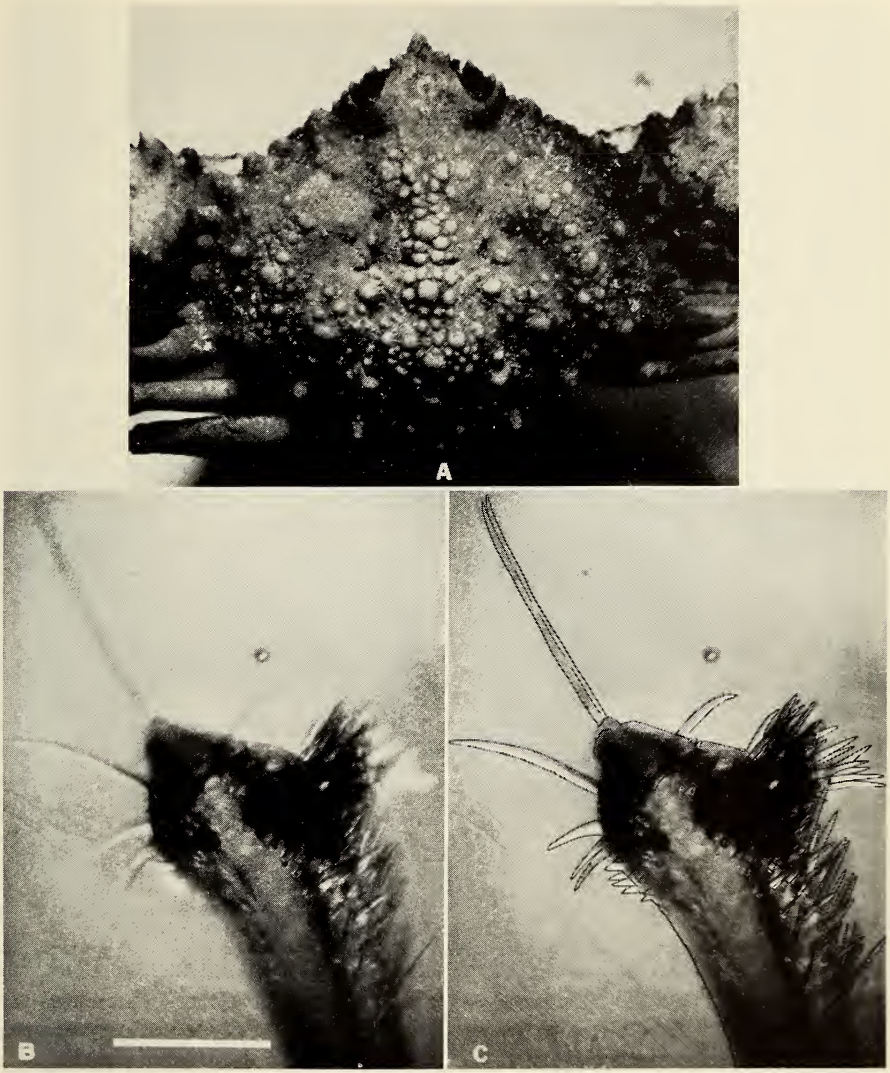
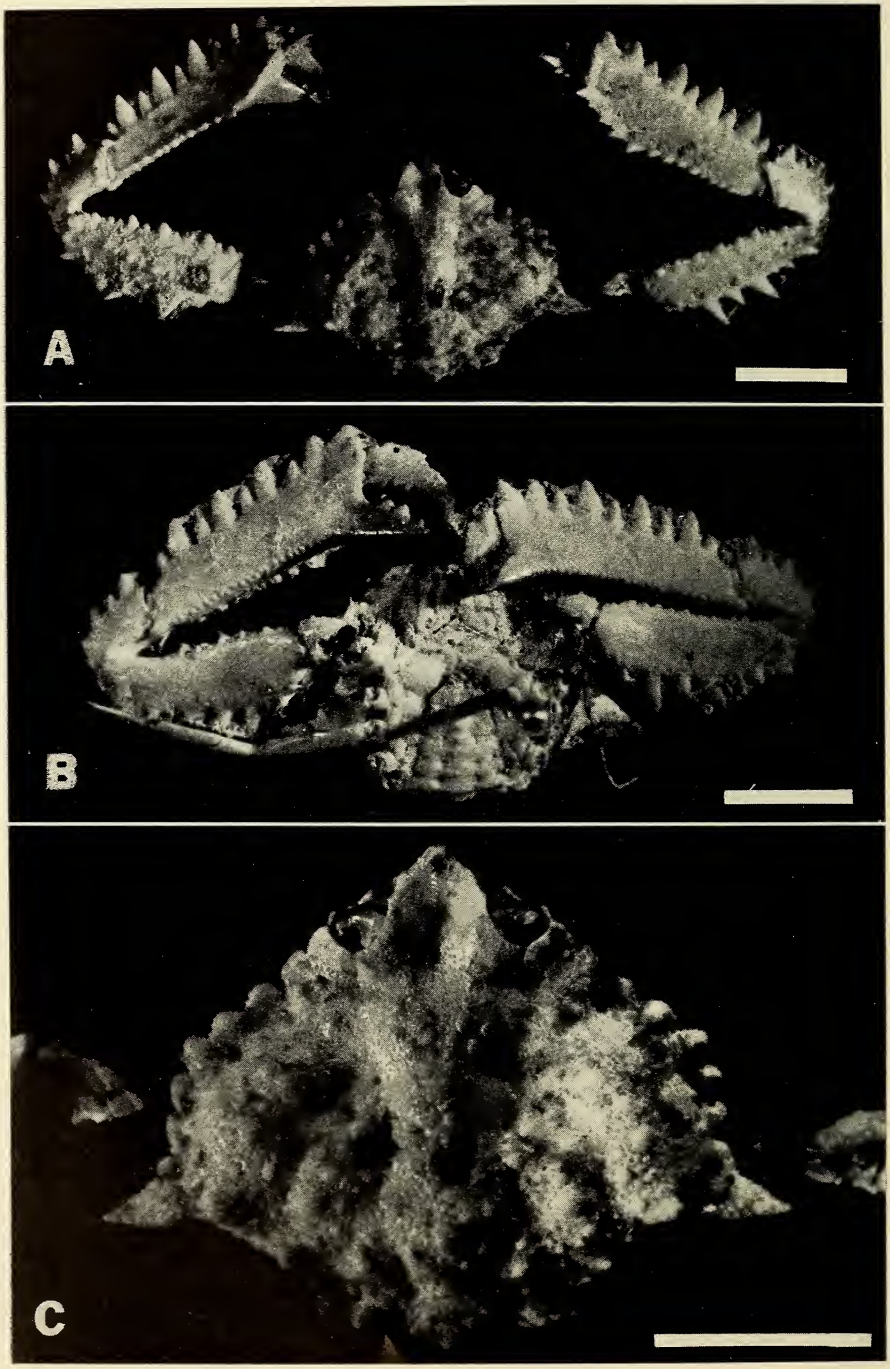


Plate 1. *Lambrus serratus* H. Milne Edwards, 1834. Male lectotype, 23 mm cl. from Veracruz, Mexico, collected by Mr. Brémond. Muséum National d'Histoire Naturelle, Paris. A, Dorsal view of carapace; B, Tip of major gonopod; C, Same, retouched to emphasize spines. Scale equals 0.5 mm, B and C.

serratus (J. Forest, in litt.). Photographs of the chelipeds of the 18 mm male of that series show the forward-directed outer marginal teeth of *Parthenope* (*Platylambrus*) *serrata* (see Discussion); the carapace and the gonopods are otherwise damaged and not available for comparative purposes.


A
B
C

The three dried male specimens in the Paris Museum were fixed by their ventral surfaces to the museum carton. The smallest male (18 mm) was in too poor condition to be examined; the larger male had the tips of the gonopods destroyed, rendering them useless for comparative purposes; the third male from Veracruz (23 mm cl) had intact gonopods and they appear as illustrated (Plate 1B, C). As evident, the configuration of the gonopods on the lectotypic male are similar to those we have illustrated (Figure 1E–H). They differ, however, from that illustrated by Williams (1965; text-fig. 252B) which now appears to have been erroneously identified as belonging to *Parthenope serrata* (H. Milne Edwards). Therefore, the specimen illustrated by Williams (and my Figure 1A–D), belong to another species which I show below to be *Parthenope* (*Platylambrus*) *granulata* (Kingsley, 1879).

The Status of *Lambrus crenulatus* Saussure, 1858

Before discussing the status of *P. granulata* it is necessary to dispose of *L. crenulatus* as a valid senior synonym for the second species. Apparently the only extant syntypic specimen deposited in the Geneva Museum is a juvenile female, 11 mm cl. Regrettably, it too is a dried specimen which was pinned by its dorsal surface to the museum carton. Photographs of both dorsal and ventral aspects of this female (Plate 2) show that it differs in several respects from the illustration of *Lambrus crenulatus* provided by Saussure (1858). The latter, for example, appears to be based on an adult of undetermined sex. Moreover, the anterolateral teeth of the carapace in the illustrated specimen, especially the tooth at the anterolateral angle, are quite produced; the posterolateral spine is directed more or less laterally, albeit slightly obliquely posteriad; the spines on the outer margin of the manus of the cheliped are distinctly curved and directed toward the fingers; the spines on the posterior margin of the merus of the cheliped are also curved outward; and the granules and tubercles on the dorsal surface of the carapace are regularly arranged and quite distinct (see Saussure, 1858, pl. 1, fig. 4). These are all features characteristic of *L. serratus*.

On the other hand, in the syntypic female the anterolateral teeth of the carapace are blunt and regularly arranged, the tooth at the anterolateral angle is not noticeably larger than the others; the posterolateral spine is directed laterally; the spines on the outer margin of the manus are

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Plate 2. *Lambrus crenulatus* Saussure, 1858. Female syntype, 11 mm cl, from Antillean Seas. Muséum d'Histoire Naturelle de Genève. A, Dorsal view of carapace; B, Ventral view of same, with chelipeds still attached; C, Closeup of carapace. Scales equal 5 mm.

bluntly triangular, although rounded posteriorly, and are only slightly directed toward the fingers, pointing outward for the most part; the spines on the posterior margin of the cheliped merus are large, long, sharp, and directed obliquely away from the plane of the merus, and they are fewer in number; finally, the granulation and tubercles on the dorsal surface of the carapace are low, rounded, and generally less distinct (Plate 2).

There seems to be no question that the illustration provided by Saussure for his description of *L. crenulatus* can be attributed to *Parthenope* (= *Lambrus*) *serrata*. The description is otherwise too brief to ascertain any salient differences between the two species. Contrarily, the syntypic female of *L. crenulatus*, being a juvenile, does not show clearly the features which characterize adult *Parthenope serrata*, and in the cheliped armature especially, differs noticeably from that seen in that species. Nevertheless, I believe that the syntypic female of *Lambrus crenulatus* may be safely assigned to the synonymy of *Parthenope serrata* based on one important feature, namely, the angle formed by the posterolateral spine of the carapace, the gastric tubercle, and the outer orbital margin on one side. In *Parthenope* (*Platylambrus*) *serrata* this angle is always less than 90° because the posterolateral spine is directed more laterally and the anterior margin of the carapace is slightly wider than in *P. granulata*. In the latter species, because the posterolateral spine is almost invariably directed obliquely posteriad, and the anterior margin of the carapace is narrower, the angle so formed is 90° or nearly thus. This feature may be seen in plates 2–5; and it is evident that the angle formed by these three points is clearly less than 90° in the juvenile syntype (Plate 2).

There are some additional facts, interesting in retrospect, concerning this specimen. Leo Zehntner, the great Swiss biologist, examined the dried specimen and expressed his doubts regarding the synonymizing of *L. crenulata* with *P. serrata* by A. Milne Edwards (1878). Zehntner's notes with the specimen read as follows: "Labelled as *Lambrus crenulatus* de Saus. According to M. Edw. Miss. Sci. Mex. page 156 this species is not distinct from *serratus* M. Edw." and again: "*Platylambrus serratus*, M. Edw. If it is true that the *Lambrus crenulatus* de Saus. is synonymous with *L. serratus*, M. Edw. (see A. M. Edw. Miss. Sci. Mex. p. 156, pl. 30, fig. 1) the figure that is given by the celebrated French carcinologist is not well [supportive]. The teeth of the anterolateral margin are more regular, according to our specimens, the carapace less inflated, the large tubercles of which more regularly arranged, the series of teeth on the superior margin of the hand point toward the fingers in a different manner, leaving the fingers uncovered, the teeth are not curved, (and) the posterior strongly projecting." [Translated from the French label in the carton in reference to *L. crenulatus*—RHG, verified by Dr. Bernd Hauser.]

In addition to the dried syntype Zehntner may have had four other

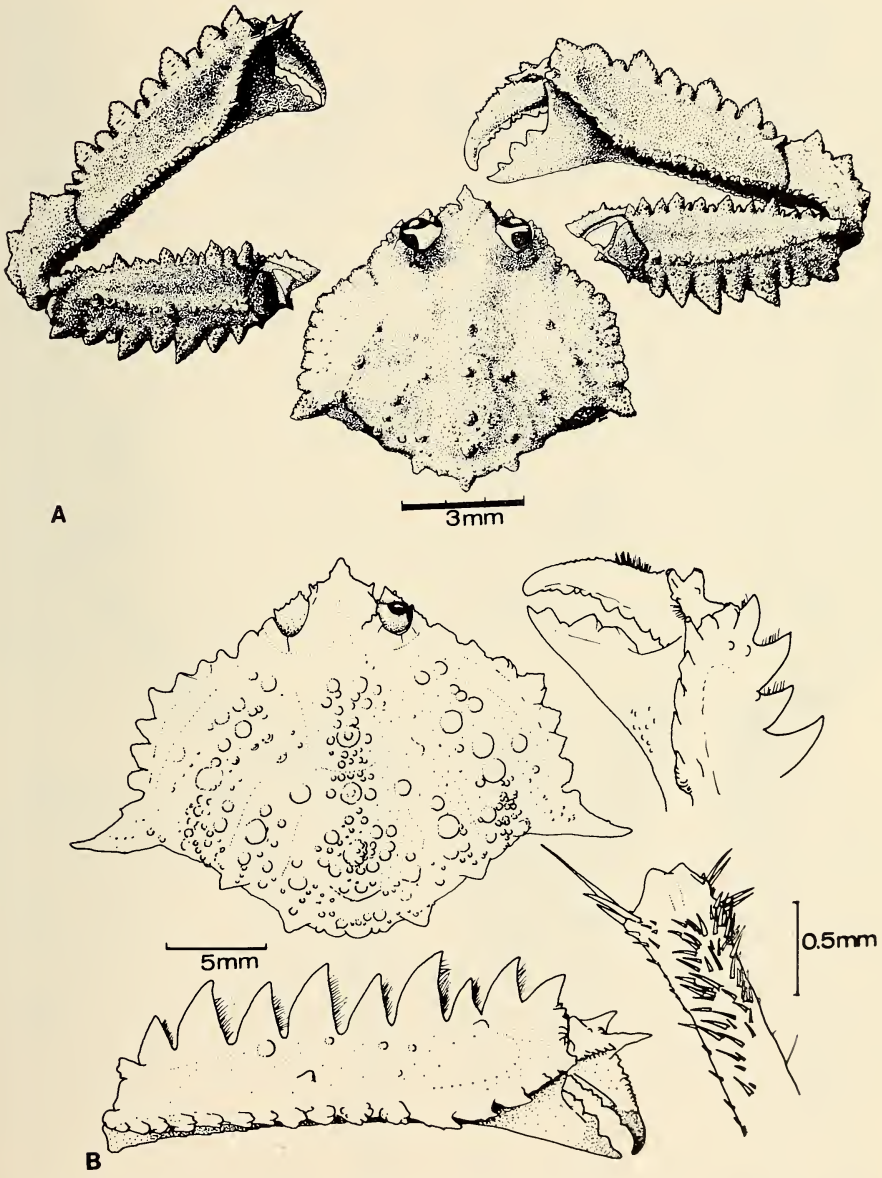
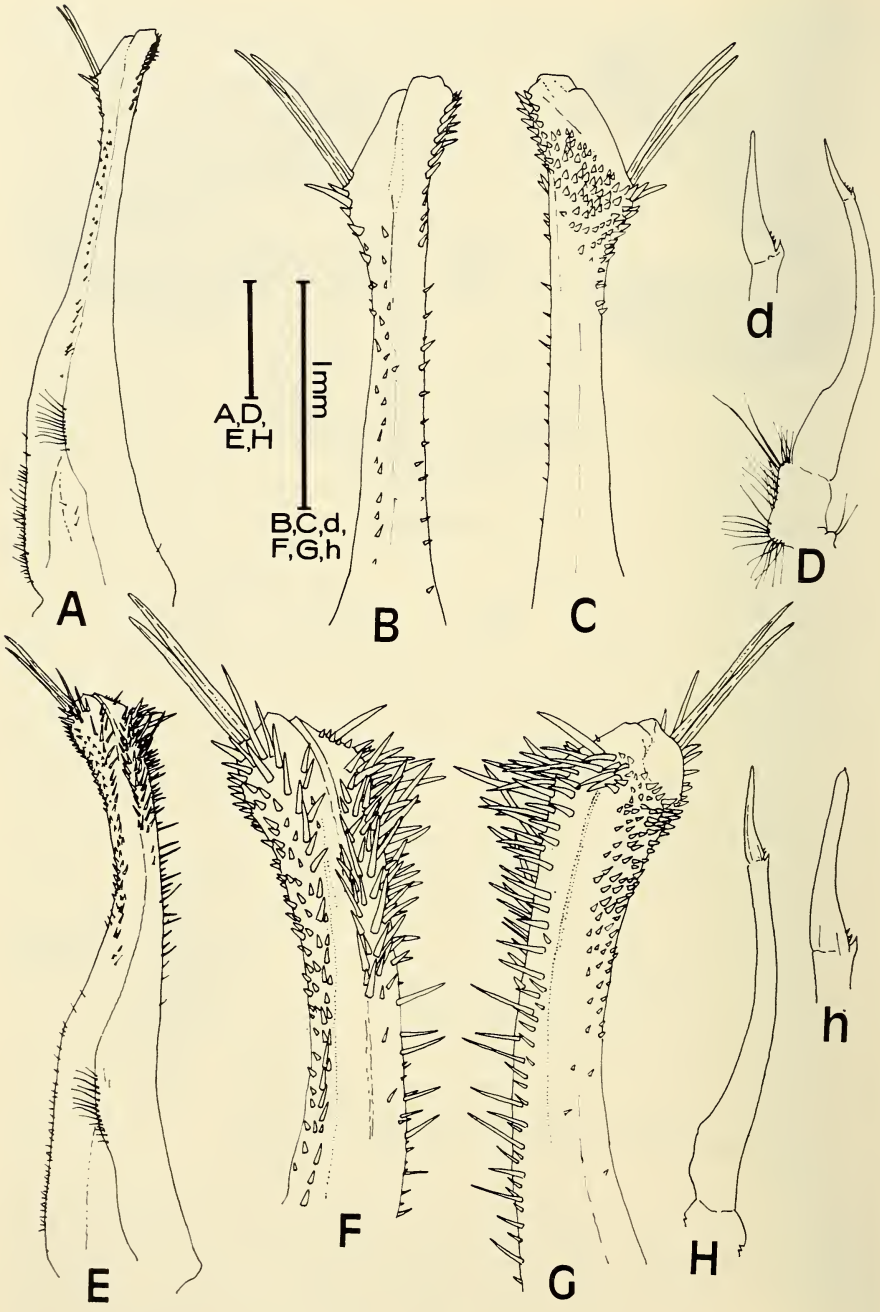


Plate 3. *Lambrus granulatus* Kingsley, 1879. Female syntype, USNM 55696, from Tortugas, Florida. Left walking legs present but omitted from illustration. B. *Lambrus lupoides* White, 1847. Male, specimen *c*, 19 mm cl, from West Indies, collected by Mr. Scrivener. British Museum (Natural History). Dorsal view of carapace; left chela; right fixed and immovable fingers; and left major gonopod tip. Scales equal 5 mm, and 0.5 mm (gonopod tip only).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specimens before him which were labelled *Lambrus serratus*, when he made the above notes, according to Dr. Bernd Hauser. If he relied more heavily on the dried specimen labelled *L. crenulatus* it is easy to see how he, and apparently also Saussure, was misled. The chelipeds of the dried female are quite different from Saussure's figure, being closer in armature to that seen in *Parthenope* (*Platylambrus*) *granulata* (Kingsley), as subsequently redescribed by Gore and Scotto (in press). Were the chelipeds not attached to the specimen I would have been inclined to believe that they were misplaced with the carapace of the dried female and belonged to another species. Fortunately, the direction of the lateral spines, and the angle formed by these with the gastric tubercle and the outer orbital margin are sufficient to identify the specimen as a juvenile of *Parthenope serrata*. Zehntner was correct in noting that the figure provided by A. Milne Edwards (1878) for *P. serrata* does not agree with Saussure's syntype, and I have already commented on this illustration. And certainly there is no possible way to equate the female syntype exactly with Saussure's illustration (1858), so that one must attribute Zehntner's confusion to the brevity of Saussure's description, the discrepancies between that author's illustration and at least one of his syntypes, and to the juvenility of the only surviving dried syntype. In any case, both the female syntype and Saussure's illustration may be correctly retained in the synonymy of *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards).

Revalidation and Establishment of Lectotype for *Lambrus granulatus* Kingsley, 1879

Kingsley's original (1879) description of this species referred only to a male specimen, now known to be a juvenile 8 mm by 9 mm carapace length by width, collected at Tortugas, Florida in 9 fathoms by a Lieutenant Jacques. Rathbun (1925) noted a female "cotype" in the National Museum collections (USNM 55696). This syntypic female was obtained from the Boston Society of Natural History which, in turn, apparently obtained it either directly from Kingsley, from the Peabody Academy of Science at Salem, Massachusetts, or from the Museum of Comparative Zoology at Harvard, where much of the Peabody Academy's collections were deposited. Three labels were in the jar of this female specimen, reading as follows:

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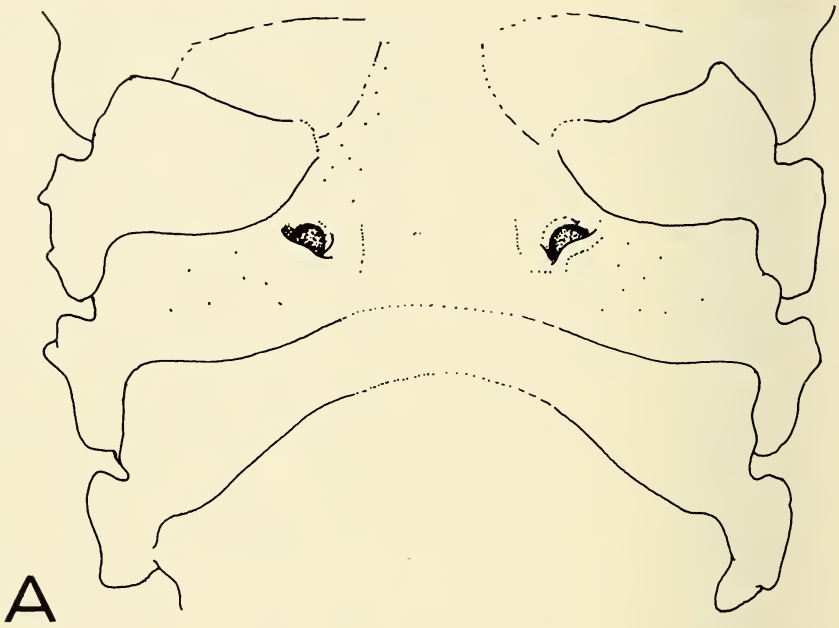
Fig. 1. Major and minor gonopods of male *Parthenope*. *Parthenope* (*Platylambrus*) *granulata*, off Cape Canaveral, Florida: A, Medial view; B, Same, detail of distal part; C, Ventral view; detail of distal part; D, minor gonopod, lateral view; d, Same, detail of distal part. *Parthenope* (*Platylambrus*) *serrata*, west of Sanibel Island, Florida: E, Medial view; F, Same, detail of distal part; G, Ventral view, detail of distal part; H, Minor gonopod, lateral view; h, Same, detail of distal part. Scales equal 1 mm.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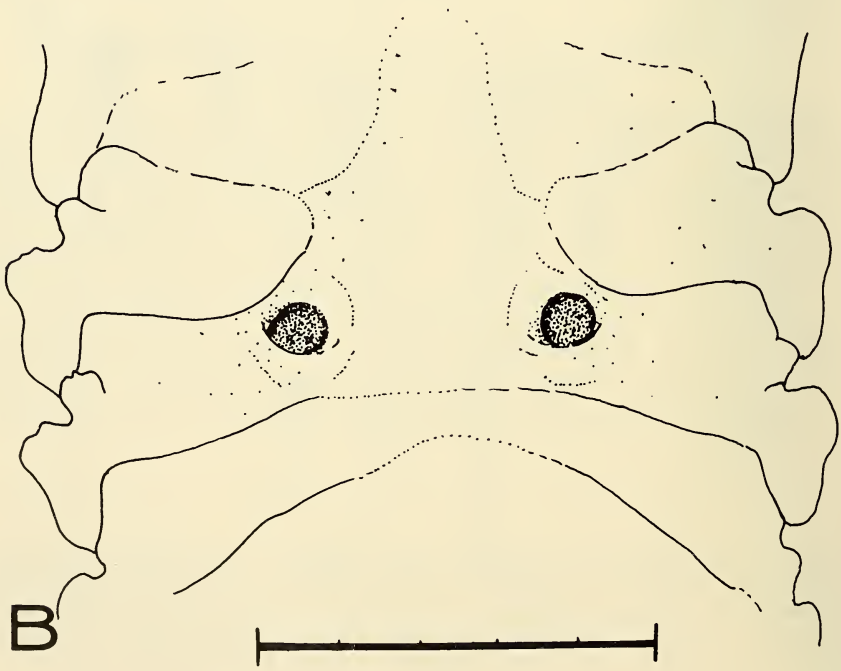
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Lambrus granulatus Kingsley Acc. No. 2876 Florida Kingsley Type

again:

Tortugas, Fla. 9 fath. Lieut. Jacques From Boston Soc. Nat. Hist. Cat. No. 55696 [USNM].

and again:

Parthenope (*Platylambrus*) *serrata* (M. Edw.) 1♀ juv.
Type of *Lambrus granulatus* Kingsley.

[The latter label appears to be in the handwriting of Mary Jane Rathbun.]

It may be reasonably assumed that Kingsley had the juvenile female specimen before him when he formulated his description for *L. granulatus* and simply failed to mention it. The labels in the jar leave no question that this specimen is syntypic with the now presumably lost male. Therefore I designate the above mentioned female as the lectotype of *Lambrus granulatus* Kingsley, 1879; the type locality remains as Kingsley noted, Tortugas, Florida.

Examination of this specimen revealed that the features considered important by Kingsley, such as slender rostrum, less prominent tooth at the lateral angle, and the smaller numbers of tubercles on the carapace, are all juvenile features. These features all become more accentuated with increasing maturity. The general carapace shape, the obliquely directed posterolateral spine, and the nearly 90° angle formed by this spine, the gastric tubercle, and the outer orbital margin of the carapace, all separate this species from *Parthenope serrata*. Gonopores are present in the specimen, and although appearing to be less exposed than those seen in similar sized specimens of *P. serrata* (see below), are small and undeveloped. The female lectotype has a damaged rostrum (Plate 3A), and the left walking legs 2, 3, 4 are present and attached, but were not illustrated; the walking legs on the right side are missing. The specimen is quite fragile, due undoubtedly both to its immaturity and its long preservation of nearly 100 years.

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Fig. 2. Gonopores of female *Parthenope* from the Gulf of Mexico. A, *Parthenope* (*Platylambrus*) *granulata*, west of Egmont Key, Florida. Note gonopores partly covered by shelflike projection of sternal region, giving "half-moon" effect. B, *Parthenope* (*Platylambrus*) *serrata*, west of Sanibel Island, Florida. Note fully exposed gonopores on sternal plate, giving rounded effect. Scales equal 5 mm.

Discussion

Parthenope serrata and *Parthenope granulata* are completely redescribed in another paper (Gore and Scotto, in press). The synopsis of features presented here may be used to separate adults of the two species, but complete descriptions should be consulted for positive identification, especially of younger adults or juveniles.

The gonopods of the males (Fig. 1) and the gonopores of the females (Fig. 2) allow the species to be easily separated. In *P. granulata* the teeth on the outer margin of the hand are nearly straight, acutely triangular or even lanceolated and constricted somewhat at their bases, and have tips that project directly outward or often obliquely forward. In *P. serrata* these same teeth are usually more widely and regularly triangular and spinous, with their tips usually curved and directed more toward the fingers. In *P. granulata*, the posterolateral spine of the carapace has its posterior margin convex or oblique, not transverse, the tip is more blunt and often somewhat foliate, pointing upward and outward, and the entire spine appears to be directed obliquely posteriad. In *P. serrata* the posterior margin of this spine is transversely straight or very slightly curved, the tip is usually distinctly acuminate, and the entire spine is directed nearly straight outward or only very slightly obliquely posteriad; some adult specimens show this latter feature more noticeably than others.

Parthenope serrata is compressed dorsoventrally, but the carapace is more inflated than *P. granulata*, the tuberculosity more diffusely dispersed dorsally, the granules and tubercles smaller and more numerous. In *P. granulata* the carapace is more compressed, and appears more angular dorsally (although this distinction is often not easily discerned in sparse material), the tuberculosity is more distinct and noticeable, the granules larger, more widely separated, and more regularly arranged, especially on the branchial ridges and interbranchial depressions. The posteriorly directed spines on the intestinal and posterior margins are, in many cases, more protuberant in *P. granulata* while appearing more blunt or reduced in *P. serrata*. When they are developed in the latter species they often curve distinctly upward. There usually appears a series of 4 or 5 clearly demarked granules in a more or less transverse row just above the intestinal tubercle, and extending toward the two posterior tubercles in *P. granulata*; these granules are indistinct or lacking in *P. serrata*. The carapace of the latter species is often more pilose than the former so that much of the carapacial features appear indistinct. The pilosity on the cheliped marginal teeth is variably heavy in both species. These features are all easily compared in Plates 4 and 5.

Sexual dimorphism in carapace shape appears in both species with males being more rounded anterolaterally, with a narrower carapace, while fe-

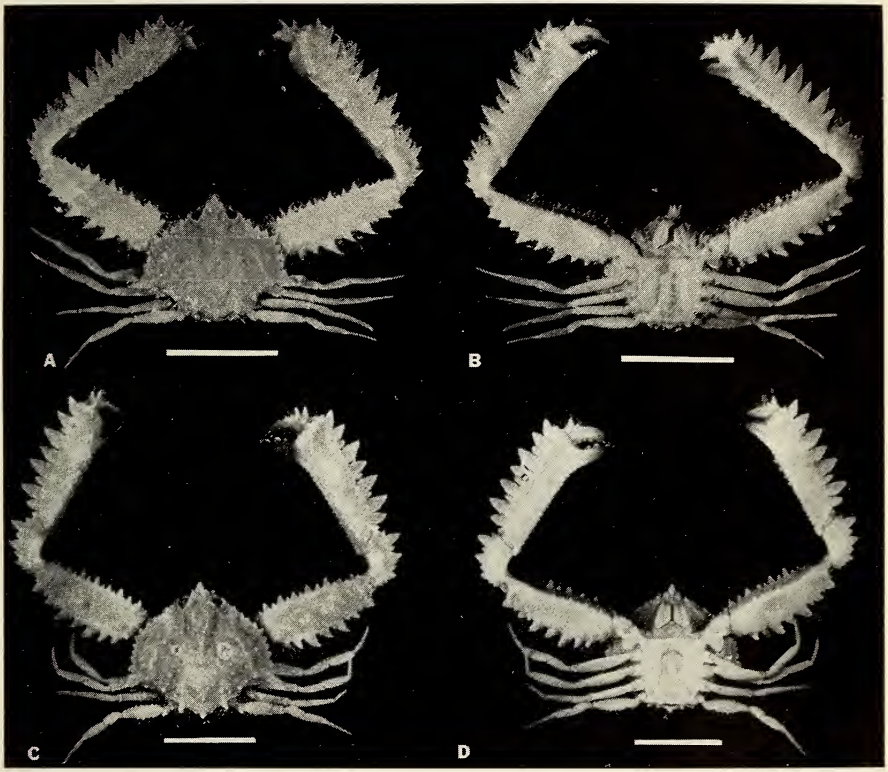

Plate 4. *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards, 1834). Male, off Honduras, Central America, R/V *John Elliott Pillsbury* station P-1361. A, Dorsal view; B, Ventral view. Note pilosity on margins of carapace and chelipeds. *Parthenope* (*Platylambrus*) *granulata* (Kingsley, 1879). Male, off central eastern Florida coast, SIFP 89: 1154. C, Dorsal view; D, Ventral view. Scales equal 10 mm.

males appear more angular anterolaterally and have a noticeably wider carapace.

Decided differences appear in the gonopores of the females of the two species. In *P. granulata*, the gonopore is raised up slightly from the plane of the sternal plate, directed more anteriorly, sheltered under a shelflike ridge, and appears distinctly half-moon shaped (Fig. 2A). In *P. serrata*, the mature female gonopore is rather flattened to the plane of the sternal plate, appears directed obliquely upward, is distinctly exposed without a shelflike ridge, and noticeably rounded (Fig. 2B). In *P. serrata* the abdominal somites are only slightly carinate transversely, the seventh somite tip is more acutely angular, and the outer margins sweep downward more abruptly to somite 6 than they do in *P. granulata*. In the latter species

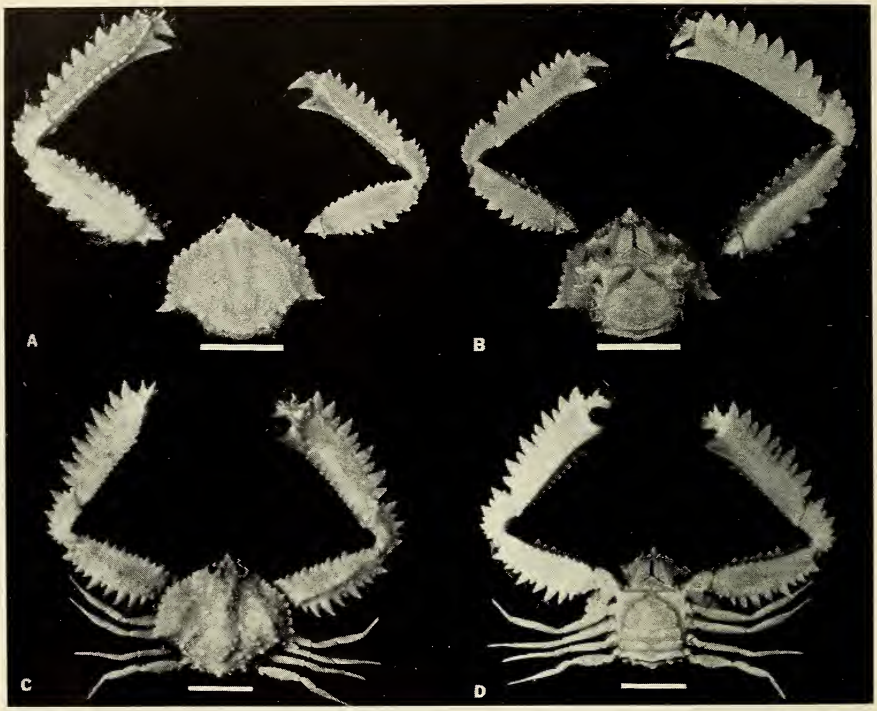

Plate 5. *Parthenope* (*Platylambrus*) *serrata* (H. Milne Edwards, 1834). Female, off Sanibel Island, Florida, SIFP 89:2526. A, Dorsal view; B, Ventral view. *Parthenope* (*Platylambrus*) *granulata* (Kingsley, 1879). Female, off Cape Canaveral, Florida, SIFP 89:1438. C, Dorsal view; D, Ventral view. Scales equal 10 mm.

the abdominal somites are often sharply carinate transversely, somite 7 is more rounded and expanded and the tip is not nearly as acute (compare Plates 5B, D).

Revised Synonymies for *Parthenope* (*Platylambrus*) *serrata* and *P.* (*P.*) *granulata*

It has not been possible to examine every specimen noted in the literature as *Parthenope serrata* to determine if it was correctly identified. However, based on descriptions, and more importantly, illustrations, a partly revised synonymy for the two species has been constructed. Under *Parthenope incertae sedis* are placed literature citations consisting of incomplete descriptions, mere species listings, or those which have not yet been reexamined for this study.

Parthenope (*Platylambrus*) *serrata* (H. Milne Edwards, 1834)
(Plates 1, 4A, B; 5A, B; Figs. 1E–H, 2B)

Lambrus serratus H. Milne Edwards, 1834:357.—Holthuis, 1959:191.—[Not White, 1847:12 (= *Lambrus hoplonotus* var. *granulosus* Miers, 1879)].

Lambrus lupoides White, 1847:12 [*Nomen nudum*; specimen *c*, as restricted herein].

Lambrus crenulatus Saussure, 1858:429 [13], pl. 1, figs. 4, 4a.—Gundlach and Torralbas, 1899:301, text-fig. on p. 303 [In reprint, 1917:12, pl. [2], fig. 5 (Not seen)].

Lambrus melanodactylus Desbonne, in Schramm, 1867:21 [Manuscript name].

Platylambrus serratus.—A. Milne Edwards, 1878:156, pl. 30, figs. 1–1c. [Illustration based on lectotype selected herein].—Rathbun, 1901:80.

Lambrus (*Lambrus*) *serratus*.—Young, 1900:102 [Key], 105.

Parthenope (*Platylambrus*) *serrata*.—Rathbun, 1919:346; 1925:516 [In part[2]], pls. 180, 181, and pl. 275, figs. 7–10 (After A. Milne Edwards, 1878; lectotype by present designation).—Boone, 1930:117 [In part], pl. 36, figs. A, B.—Chace, 1956:162.—Bullis and Thompson, 1965:13 [In part, R/V *Oregon* stations, and R/V *Silver Bay* stn. 71 only].—Leary, 1967: text-fig. (p. 45), 50 [Listed].—Yang, 1971:166, figs. 1–9 [Larval development].—Felder, 1973:45 [Key], pl. 6, fig. 8 [Right chela].—Zeiller, 1974:100, color plate.

Lambrus (*Platylambrus*) *serratus*.—Flipse, 1931:93.

Type-Locality.—"L'Océan indien" by original designation; erroneous locality for the West Indies. Veracruz, Mexico by present selection of male lectotype; latter in Muséum National d'Histoire Naturelle, Paris, France.

Parthenope (*Platylambrus*) *granulata* Kingsley, 1879
(Plates 3A, 4C, D; 5C, D; Figs. 1A–D, 2A)

Lambrus granulatus Kingsley, 1879:150 [As noted, female syntype, USNM 55696; lectotype as selected herein].

Platylambrus serratus.—Aurivillius, 1889:59, pl. 4, fig. 8.—Hay and Shore, 1918:463, pl. 39, fig. 7.

Parthenope (*Platylambrus*) *crenulata*.—Verrill, 1908:417, pl. 28, fig. 5 [Not pl. 27, as in text].

Parthenope crenulata.—Verrill, 1922:155, text-fig. 12.

Parthenope (*Platylambrus*) *serrata*.—Rathbun, 1925:516 [in part[3], not pls. 180, 181, and pl. 275, figs. 7–10 (all = *P. serrata*)].—Boone, 1930:117 [In part, not pl. 36, figs, A, B (= *P. serrata*)].—Springer and Bullis,

1956:22 [Listed].—Bullis and Thompson, 1965:13 [In part, R/V *Silver Bay*, stn 54, R/V *Combat*, stn 397, only].—Williams, 1965:267, text-figs. 247, 252B.

Type-Locality.—Tortugas, Florida, 9 fathoms. Lectotype by present selection in National Museum of Natural History, Washington, D.C., USNM 55696.

Parthenope (Platylambrus) incertae sedis

Lambrus crenulatus.—Stimpson, 1860:201; 1871a:129; 1871b:101 [Discussion].—Martens, 1872:85.

Platylambrus serratus.—Kingsley, 1880:390.—A. Milne Edwards, 1880:5.—Smith, 1886:629 [25].—Rathbun, 1897:12; 1898:261; 1900:514 [Key].—A. Milne Edwards and Bouvier, 1923:355.—Balss, 1924:181.—Flipse, 1930:86 [Listed].

Lambrus serratus.—Miers, 1886:94 [Listed], 97.—Ortmann, 1893:415.—Moreira, 1901:62, 129, 130 [Synonymy].—Flipse, 1930:84 [Listed].

Parthenope (Platylambrus) serrata.—Boone, 1927:42.—Rathbun, 1933:38 [Key], 39; 1935:114 [Discussion].—Chace, 1956; 162 [In part, MHN LaSalle material only].—Righi, 1966:140.—Rodrigues da Costa, 1968:143; 1969:177 [Abstract].—Türkay, 1968:251.—Godcharles and Jaap, 1973: 48.—Coêlho and Ramos, 1972:205 [Listed].—Pequegnat, 1975:48 [Listed].

Parthenope serrata.—Hildebrand, 1955:193.—Wass, 1955:140 [Key], 172.—Hulings, 1961:219 [Listed].—Rouse, 1970:146.

A possible means for separating the two species listed under the *incertae sedis* heading might be their zoogeographic distribution. *Parthenope granulata* is a continental species known from Cape Hatteras southward around the tip of Florida and into the eastern Gulf of Mexico as far west as Louisiana. Its excontinental distribution is Bermuda, a probable occurrence at Bahia Honda, Cuba (NMNH records see Appendix 1), and a single record from St. Thomas, Virgin Islands. It is thus possible that all specimens listed from the western Gulf of Mexico and middle and lower Caribbean southward to Brazil will prove to belong to *Parthenope serrata.* The latter species is known from both continental and insular records in this region. The main zone of sympatry for the two species appears to be around the Florida peninsula to as far north as Cape Canaveral on the central eastern coast.

Further support for this suggestion comes from museum records on specimens of both *P. granulata* and *P. serrata* in both the National Museum of Natural History and the Rijksmuseum van Natuurlijke Historie in Leiden. Dr. Lipke B. Holthuis informed me (in litt.) that in the entire collection of "*P. serrata*" in the Leiden museum, six samples of *P. granu-*

lata occur, all from stations in the Gulf of Mexico (R/V *Oregon* 3799, 3821, 3855, 3849, 3935, 3947). All other material in that museum, including Surinam specimens from the "Coquette" (Holthuis, 1959), and the male from Curaçao taken by J. Boeke and noted by Rathbun (1919; see Appendix 1), as well as specimens collected by the University of Miami, Rosenstiel School of Marine and Atmospheric Sciences R/V *John Elliott Pillsbury* (stations P-330, 396, 430, 433, 444, 574) from the southwestern Caribbean Sea off Honduras, Panama, and Colombia, and R/V *Oregon* stations 4166 and 4179 from off the Guianas, proved to be *P. serrata*. Some material collected by Dr. Holthuis from Biscayne Bay, Florida, also belonged to this species, again pointing out the zone of overlap between the two forms. Other material from the National Museum of Natural History examined by me (Appendix 2) also reflects this distribution.

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Footnotes

* Scientific Contribution No. 73, from the Smithsonian Institution-Harbor Branch Foundation, Inc., Scientific Consortium, Link Port, Ft. Pierce, Florida 33450.

[1] Dr. Forest noted (in litt.) "Pour les deux autres spécimens, sans étiquette, il ne sera sans doute jamais possible de prouver que ce sont des syntypes, mais à l'inverse du spécimen de Vera Cruz, il sera éqalement impossible de prouver le contraire. Le solution serait peut-etre de spécifier que, dans le cas où la preuve serait apportee que le spécimen de Vera Cruz a été recueilli apres 1834 et que, par conséquent, il ne peut etre considéré comme syntype, il faudrait, faute d'autres syntypes certaines, le considérer comme néotype de *Lambrus serratus*."

[2] See Appendix 1.

[3] See Appendix 1.

Appendix 1

Reidentification of specimens of *Parthenope serrata* identified by Mary Jane Rathbun (1925: Table, p. 518).

USNM catalog No.	Specimens	Locality	Corrected identity
7249	1♂, 1♀ juv	Off Cape Hatteras	*P. granulata*
18799	1♂, 2♀ (1 ovig)	Off Cape Lookout	*P. granulata*
17865	1♂	Off Cape Fear	*P. granulata*
4500	1♀	Pensacola	*P. granulata*
9676	1 Chela	Off Cape San Blas	*P. granulata* (Based on teeth)
15168	1♂	Off Cape San Blas	*P. granulata*
49200	1♂ juv	S of St. George Isl.	*P. granulata*
49199	1♂ juv	Deadman's Bay	*P. granulata*
49198	1♀ juv	Deadman's Bay	*P. granulata*? (Very small)
49197	1♂ juv	Deadman's Bay	*P. granulata* (Vial numbered 49200)
49007	3♂ (1 soft)	North Key Section	*P. granulata*
49006	1♂	Pepperfish Key Section	*P. granulata*
15215	1♂	W of Charlotte Harbor	*P. granulata*
9827	1♀	W of Charlotte Harbor	*P. granulata*
50458	2♂	Off Anclote	*P. granulata*
49005	1♀ ovig	Highland Section	*P. granulata*
55692	1♂ juv	Off Sanibel Islands	*P. granulata* (No gonopods)
50459	1♂, 2♀, 2♂ juv	Off Sanibel Islands	*P. serrata*
15217	1 juv	SW of Charlotte Harbor	*P. serrata*? (Very small)
15216	1 juv	SW of Charlotte Harbor	*P. granulata* (Based on cheliped)
55696	1♀	Tortugas	*P. granulata* (♀ syntype)
Mus. S.U.I.	3♂	Tortugas	*P. serrata*
49000	2♂ (1 juv)	Off Dry Tortugas	*P. granulata*
48997 (a)	5♂, 1♀ juv	Off Dry Tortugas	*P. granulata*
48997 (b)	1♂, 2♀ juv	Off Dry Tortugas	*P. serrata*

Appendix 1. Continued.

USNM catalog No.	Specimens	Locality	Corrected identity
48998 (a)	2♂	4 mi E Dry Tortugas	*P. granulata*
48998 (b)	1♂	4 mi E Dry Tortugas	*P. serrata*
48999	1♂	Gulf of Mexico	*P. serrata*
50373	1 juv	Gulf of Mexico	Lost
49002	1♀ juv	W channel, to Key West	*P. granulata*
49016	1♀	Gulf of Mexico	*P. serrata*
49008	1♂, 1♀ (ovig)	Off Key West, inside reef	*P. serrata*
49003*	1♀ juv, 1 juv	Off Key West, inside reef	*P. granulata*†
49004	2♂	Off Key West, inside reef	*P. serrata*
18675	1♂, 1♀ juv	Off Key West	*P. serrata* (Male photographed)
Mus. S.U.I.	1♀	Off Key West	
Mus. S.U.I.	2♂, 1♀	Off Key West	
49010	1♂, 2♀	Florida Bay	*P. serrata*
49011	3♀	Florida Bay	*P. serrata*
49009	2♂, 2♀	Florida Bay	*P. serrata*
49012	1♂, 2♀ (1 ovig)	Grecian Shoals, Hawk Chnl	*P. serrata*
49013	1♀ juv	Key, Biscayne Bay	*P. serrata*? (Very small)
31064	1♀ juv	Bahamas, Governor's Hbr	*P. serrata*
Mus. S.U.I.	1♂	Bahia Honda, Cuba	*P. granulata*? (Very small) USNM 48749
17212	1♀	Jamaica	Not seen (Dried specimen)
24235	1♂ juv	Mayaguez Hbr., P. Rico	*P. serrata*
Copenhagen Mus.	Unk	St. Thomas, Virgin Isl.	Not seen
Leiden Mus.	1♂	Piescaderos Bay, Curacao	*P. serrata* (L. B. Holthuis, in litt.)

* 1♂, 1♀ on exchange to British Museum, not seen; † USNM specimens only.

Appendix 2

Reidentification of other material in the National Museum of Natural History Washington, D.C., previously identified as *Parthenope* (*Platylambrus*) *serrata*.

USNM catalog No.	Specimens	Locality	Corrected name
66006	1 ♂ juv	Tortugas, Fla; 21 June 1931; "From stomach of *Syacium micrurum*"	*P. granulata*
67799	1 ♀ juv	N of Puerto Rico; 18°31'N, 66°10'W; 3 February 1933; 70 m	*P. serrata*
72157	3 ♂ ♂	Tortugas, Fla; 21 June 1931	*P. serrata*
	1 ♀	Same data	*P. granulata*
72160	1 ♀ ovigerous	Tortugas, Fla; 11 June 1925; 15–9 m	*P. granulata*
72161	1 ♀	Tortugas, Fla; 1 mile west of Fort; "Swimming at surface over about 70 ft of water"	*P. serrata*
72162	1 ♂	Tortugas, Fla; 20 June 1931; 22 m	*P. serrata*
72163	2 ♀ ♀ (1 juv)	Tortugas, Fla; 11 June 1925; 18 m	*P. serrata*
72164	1 ♀	Tortugas, Fla; 26 June 1931	*P. serrata*
72165	1 ♀	S of Loggerhead Key, Tortugas, Fla; 4 August 1931	*P. granulata*
72168	1 juv	Tortugas, Fla; 11 June 1925; 37 m	*P. granulata**
72169	1 Right cheliped	Tortugas, Fla; 10 June 1925	*P. granulata**
72170	1 ♀ juv	Tortugas, Fla; 26 June 1931	*P. serrata*
72171	1 ♀ juv	Tortugas, Fla; 23 June 1932; "Out of Williams Fish #238"	*P. granulata**
72175	1 ♂	Tortugas, Fla; 23 June 1932	*P. serrata*
72179	1 ♂	Tortugas, Fla; 8 August 1930	*P. serrata*
75035	1 ♂	St. Thomas, Virgin Islands; 5 April 1937	*P. serrata*

* Probably this species, based on cheliped armature or carapace angular meristics.

Appendix 2. Continued.

USNM catalog No.	Specimens	Locality	Corrected name
81356	2♀♀	N of St. George Island, Bermudas; 17–22 June 1936; 18 m	*P. serrata*
81371	2♀♀ (1 ovigerous)	Tortugas, Fla; 1 August 1931	*P. serrata*
93679	1♀	R/V *Oregon* 635; 29°12′N, 87°49′W; 40′ flat trawl; 677–824 m; 18 September 1952	*P. granulata*†
95718	2♂♂	Islas Los Roques, Venezuela; September 1950	*P. serrata*
99501	1♂	R/V *Oregon* 1215; Cape Florida; 25°45′N, 82°03′W; 18 m; 19 November 1954	*P. serrata*
101607	1♀ ovigerous	R/V *Combat* 397; E off Cape Fear; 34°26′N, 75°55′W; 73 m; 21 June 1957	*P. granulata*
101608	1♀	R/V *Silver Bay* 54; Gulf of Mexico; 28°09′N, 83°50′W; 37 m; 16 July 1957	*P. granulata*
101609	1♂	R/V *Silver Bay* 71; W off Key West; 25°26′N, 81°40′W; 8 m; 18 July 1957	*P. serrata*
103477	1♂	R/V *Oregon* 2249; Between British and Dutch Guiana; 7°40′N, 57°34′W; 55–49 m; 31 August 1958	*P. serrata*
103478	1♀	R/V *Oregon* 2272; Between British and Dutch Guiana; 6°30′N, 55°52′W; 31 m; 3 September 1958	*P. serrata*
105006	1♀ juv	R/V *Atlantis* 254; Gulf of Darien; 8°40′N, 77°10′W; 60–66 m; 10 February 1960	*P. serrata*
107803	2♀♀ (1 ovigerous)	Gulf of Mexico, S of Houma, Louisiana	*P. granulata*

† Depth record for *P. granulata* if station data are correct.